Appl. No. 10/055,352   Page 5 of 7
Amendment and/or Response
Reply to Office action of 8 October 2004

REMARKS

Claims 1-14 are pending in this application.

The Office action rejects claims 1-14 under 35 U.S.C. 101. The applicants respectfully traverse this rejection.

The Examiner cites the reference to a random or pseudorandom function in the claims, and to a learning rate that does not always increase a rate of convergence as the basis for this rejection, and concludes that "the disclosure is non statutory".

The applicants are unaware of any statute that precludes the patenting of an invention that includes a random process, or a statute that requires a learning rate that always increases. A search of the USPTO database of granted patents finds 33,384 granted patents that include the word "random" in the claims.

35 U.S.C. 101 states: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." The applicants respectfully maintain that the applicants claim "a new and useful process", are entitled to "obtain a patent therefor", and respectfully request the Examiner's reconsideration of the rejection of claims 1-14 under 35 U.S.C. 101.

The Office action rejects claims 1-14 under 35 U.S.C. 102(b) over Mehrotra ("Artificial Neural Networks", MIT Press, 1997). The applicants respectfully traverse this rejection.

Claim 1, upon which claims 2-7 depend, claims a method for training a self ordering map for use in a computing system, comprising updating weights of the map based on a learning rate that is generated according to a function that changes in a fashion that is other than monotonically decreasing with the training epochs.

Claim 8, upon which claims 9-14 depend, claims a method of training a self ordering feature map for use in a computing system, comprising iteratively identifying a winning competition node of a self ordering feature map according to a least distance criterion and adjusting a synaptic weight of at least the winning node using a learning rate

US020030 Final 4.A08   Atty. Docket No. US020030

Appl. No. 10/055,352
Amendment and/or Response
Reply to Office action of 8 October 2004

Page 6 of 7

to update the synaptic weight that is based on a function other than one that is monotonic with subsequent training epochs.

Mehrotra teaches the conventional use of a monotonically decreasing function, and thus does not teach the applicants' invention.

The Office action cites "mathworld.wolfram.com" for a definition of a monotonic function as: "A function which is either entirely nonincreasing or nondecreasing. A function is monotonic if its first derivative (which need not be continuous) does not change sign." The applicants concur with this definition.

The Examiner expands upon this definition and asserts that if the function's derivative is negative and becomes zero at any time, it is not monotonic. The applicants respectfully disagree with this misinterpretation of the term monotonic. As noted in the applicants' prior response, the Examiner is mistaken in defining "monotonic" as not including a level state.

In the interest of advancing prosecution in this case, the applicants request that the Examiner consider the following.

If the definition of monotonic is "entirely increasing or decreasing", as suggested by the Examiner, the definition in Mathworld would not be worded as "entirely nonincreasing or nondecreasing". Consider a constant function, which is the epitome of a monotonic (monotonous) function. A constant function satisfies the definition of monotonic, in that it is nonincreasing, or nondecreasing, and its derivative does not change sign. According to the Examiner's alternative definition, a constant function would be defined as being non-monotonic, which is inconsistent with both Webster's and Mathworld's definition.

Further, if, as suggested by the Examiner, the interpretation of monotonic does not include a level state, the interpretation provided in Mathworld would necessarily be that the first derivative is always positive or always negative, and not the looser definition of not changing sign, because the value of zero is unsigned. One does not refer to "positive zero" or "negative zero", because there is no difference between the two. A change of derivative from "-1 to 0" cannot be termed a change of sign, because the change can equivalently be stated as a change from "-1 to -0", if one were to arbitrarily

Appl. No. 10/055,352   Page 7 of 7
Amendment and/or Response
Reply to Office action of 8 October 2004

assign a sign to zero. A function that is a level value or includes level values conforms to Mathworld's interpretation of monotonic, in that it does not change sign, which is inconsistent with an interpretation that requires a continuous positive or negative sign, as suggested by the Examiner.

Because Mehrotra teaches a monotonically decreasing function for providing the learning rate for training a neural network, and the applicants specifically claim a function other than a monotonically decreasing function, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 1-14 under 35 U.S.C. 102(b) over Mehrotra.

In view of the foregoing, the Applicant respectfully requests that the Examiner withdraw the rejections of record, allow all the pending claims, and find the present application to be in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Robert M. McDermott, Esq.
Reg. No. 41,508
804-493-0707

US020030 Final 4.A08   Atty. Docket No. US020030